

REMARKS**I. General**

The issues outstanding in the instant application are as follows:

- The Office Action Summary indicates the Drawings are objected to by the Examiner;
- The Specification is objected to;
- Claims 6, 14 and 20 are objected to;
- Claims 13, 21-23, 25, 27, 29-31, 38-41, 47-53, 56-58, 67, 68, 71-73, 75, 76, 86, 87, 95-97, 100, 101, 106-109 and 113-123 stand rejected under 35 U.S.C. § 112, second paragraph;
- Claims 1-11, 15-20, 26-28, 44, 51, 54, 55, 59-62, 64-66, 69, 70, 74, 77-84, 88, 89, 92-94, 99-101, 116, 119, 120 and 124-127 stand rejected under 35 U.S.C. § 102(b) as anticipated by Nishikawa et al, U.S. Pat. No. 5,166,693 (hereinafter *Nishikawa*);
- Claims 1, 12, 79, 85, 90 and 91 stand rejected under 35 U.S.C. § 102(b) as anticipated by Yamazaki, U.S. Pat. No. 5,561,434 (hereinafter *Yamazaki*);
- Claims 24, 42, 43, 98, 110 and 111 stand rejected under 35 U.S.C. § 103(a) as unpatentable over *Nishikawa*;
- Claims 32, 33, 102 and 103 stand rejected under 35 U.S.C. § 103(a) as unpatentable over *Nishikawa* in view of Kitsch et al, U.S. Pat. No. 5,990,835 (hereinafter *Kitsch*);
- Claims 34-37, 104 and 105 stand rejected under 35 U.S.C. § 103(a) as unpatentable over *Nishikawa* in view of Stotler et al, U.S. Pat. No. 6,731,245 (hereinafter *Stotler*);
- Claim 45 stands rejected under 35 U.S.C. § 103(a) as unpatentable over *Nishikawa* in view of Tillery et al, U.S. Pat. Pub. No. 2004/0150561 (hereinafter *Tillery*); and
- Claims 25, 46, 63 and 128 are objected to as being dependent upon a rejected base claim.

Applicant hereby traverses the outstanding objections and rejections of the claims, and requests reconsideration and withdrawal of the outstanding objections and rejections in light of the amendments and remarks contained herein. Claims 1-128 remain pending in this application.

II. The Drawings

The Office Action Summary indicates the Drawings are objected to by the Examiner. However, the body of the Office Action fails to advance any objection to the drawings. If the Examiner has any objections to the formal drawings submitted with the present application at filing, Applicant requests that the Examiner set forth these objections in a non-final Office Action so that Applicant may have a full and fair opportunity to address any such objections.

III. Objection to the Specification

The Office Action objects to the specification as failing to provide proper antecedent basis for the claimed subject matter under 37 C.F.R. 1.75(d)(1) and MPEP § 608.01(o). The Office Action alleges that “the recitation of ‘diversity monopole feed element’” in claim 27 “found no support in the specification.”

Applicant would like to respectfully point out that claim 27 does not recite the phrase “diversity monopole feed element.” Claim 27 recites: “The array of claim 26 wherein said diversity monopole elements comprise a monopole feed element and a ground providing a differential path” (emphasis added).

First, Applicants note that original claims constitute their own description, see M.P.E.P. § 2163.03 citing *In Re Koller*, 613 F.2d 819, 204 USPQ 702 (CCPA 1980). Since the term “monopole feed element” is present in Applicant’s claim 27, as originally filed, and the term “diversity monopole elements” is present in Applicant’s claim 26, as originally filed, Applicants assert that claim 27 (and 26) is self-enabling under M.P.E.P. § 2163.03.

Regardless, Applicant notes that the subject matter of a claim need not be described literally (i.e. using the same terms) in order for the disclosure to satisfy the description requirement, see M.P.E.P. § 2163.02. Paragraph [0075] of the present specification, in part, states: “Antenna element 500 employs monopoles 501 as feed elements....Ground plane 502 forms a differential path for monopoles 501, resulting in dipole like characteristics for element 500.” Applicant assert that the quoted passage and/or the subsequent description appearing in paragraph [0075] is sufficient to enable one skilled in the art to make and/or use

the invention as claimed in claim 27. Therefore, Applicant respectfully asserts that the objections to claim 27 should be withdrawn.

IV. Claim Objections

Claims 6, 14 and 29 are objected to because of informalities. In response Applicant has amended claim 6 above to replace the occurrence of “w herein” with “wherein.”

The Office Action suggests that in claim 14, the word “elements” should be changed to the phrase “said elements.” However, claim 14 recites: “The array of claim 12 wherein elements for different bands are interleaved.” As there is no antecedent basis for the phrase “elements for different bands” and the meaning of the claim (i.e. elements for one band are interleaved with elements for at least one other band) is clear from the claim language as filed, Applicant respectfully asserts that claim 14 need not be amended.

In claim 29, line 2, the phrase “define a planer disc” has been amended above to read “defines a planar disc” and the phrase “are ultra wideband” has been amended to read “is ultra wind band” as suggested by the Office Action.

Although not cited in the Office Action, claim 79 has been amended to correct typographical errors discovered during the preparation of this paper. As each of the claim objections have been dealt with by a corresponding amendment or argument, Applicant respectfully asserts that the claim objections should be withdrawn.

V. Claim Rejections under 35 U.S.C. § 112, second paragraph

Claims 13, 21-23, 25, 27, 29-31, 38-41, 47-53, 56-58, 67, 68, 71-73, 75, 76, 86, 87, 95-97, 100, 101, 106-109 and 113-123 stand rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With respect to claims 13, 67, 75 and 86, the Office Action alleges that it is unclear what is meant by “the bands share an aperture.” Applicant respectfully asserts that one of ordinary skill in the art would appreciate the meaning of the bands of a multi-band array

(such as recited in “parent” claim 12) sharing an aperture, particularly in light of the teachings of the present specification. For example, paragraph [0010] states: “The array is preferably laid out to accommodate elements for multiple bands within the same area so that the bands share the same aperture.” Paragraphs [0081] and [0082] of the specification go on to describe embodiments of aperture sharing as illustrated in FIGURES 18-20. Therefore, Applicant respectfully asserts that the meaning of the phrase “the bands share an aperture” and/or the like appearing in claims 13, 67, 75 and 86 is clear.

The Office Action inquires as to what is meant by the word “shaped” in the phrase “cross shaped feed element” of claims 21 and 95 and in the phrase “cross shaped parasitic element” of claims 23 and 97. Applicant respectfully directs the Examiner’s attention to paragraph [0037], wherein the cross-style antenna elements employing cross-shaped feed and parasitic elements of the embodiment illustrated in FIGURE 3 is described. Applicant respectfully asserts that the use of the word “shaped” in the phrase “cross shaped feed element” in claims 21 and 95, and “cross shaped parasitic element” in claims 23 and 97, would be clear to one of ordinary skill in the art, particularly in light of the teachings of the present specification.

The Office Action points out that in claim 25 “said parasitic element” has no antecedent basis. In response Applicant has amended claim 25 to clarify that the parasitic element and feed elements of claim 25 are elements of the stacked patch antenna elements recited in “parent” claim 19. Claim 25 has also been amended to correct a typographical error, replacing “0.3 to 0.8 wavelengths” with “.03 to .08 wavelengths” for parasitic and feed element spacing.

The Office Action inquires: “In claims 27 and 100, what is meant by ‘said diversity monopole elements comprise a monopole feed element and a ground providing a differential path’?” For any necessary clarification, the Examiner’s attention is directed to paragraph [0075] of the specification, wherein embodiments 500, 700, 800 and 900 of diversity monopole elements are described, referring to FIGURES 5-9. For example this paragraph of the specification provides: “Ground plane 502 forms a differential path for monopoles 501, resulting in dipole like characteristics for element 500.” Applicant respectfully asserts that one of ordinary skill in the art would find the meaning of the phrase “said diversity monopole

elements comprise a monopole feed element and a ground providing a differential path” clear, particularly in light of the teachings of the specification and drawings.

The Office Action alleges that, in claim 29, it is unclear what is meant by “said monopole feed element define a planer disc.” The Examiner’s attention is respectfully directed to paragraph [0075] of the specification, which provides: “Planar disc monopole 701 may be utilized by embodiment 700 for ultra wideband characteristics.” As also noted in this paragraph, embodiment 700 appears in FIGURE 7 of the present application, which clearly illustrates planar disc monopole 701 in such a manner that the meaning of the term “said monopole feed element defines a planer disc” would clear to one of ordinary skill in the art.

The Office Action states: “In claim 30, it is unclear what is meant by ‘said monopole feed elements define a plurality of rings’?” Again, the Examiner’s attention is directed to paragraph [0075] of the specification, which in referring to FIGURE 8 provides: “Multiple circular ring monopoles 801 may be used to provide antenna element 800 multi-band characteristics.” Applicant respectfully asserts that one of ordinary skill in the art would find the meaning of the phrase “said monopole feed elements define a plurality of rings” clear, particularly in light of the teachings of the specification and drawings.

The Office Action states: “In claim 31, it is unclear what is meant by ‘said monopole feed elements define a square’?” The Examiner’s attention is again directed to paragraph [0075] of the specification, which in referencing FIGURE 9 provides: “Square plate monopoles 901 may be employed to provide antenna element 900 broadband characteristics.” Applicant respectfully asserts that one of ordinary skill in the art would find the meaning of the phrase “said monopole feed elements define a square” clear, particularly in light of the teachings of the specification and drawings.

The Office Action also indicates: “In claims 38 and 106, it is unclear what are meant by ‘integrated magnetic dipole’ and ‘integrated electric dipole’?” Applicant respectfully points out that claims 38 and 106 actually recite: “each of said antenna elements comprise an integrated magnetic dipole and electric dipole.” Paragraph [0078] of the present specification describes FIGURES 13 and 14 as illustrating:

antenna elements 1300 and 1400 providing branch diversity using integrated magnetic and electric dipoles. Magnetic dual branch diversity antenna 1301 or 1401 is provided by slots 1302 and 1303 or 1402 and 1403 in the electrical conductor boundary 1304 or 1404.

The same paragraph goes on to state:

With attention directed to FIGURE 13, four beams providing four branch diversity may be obtained by integrating magnetic slot antenna 1301 with cross shaped electric dipoles 1305 within the same area. Alternatively, as shown in FIGURE 14, four beams providing four branch diversity may be obtained by integrating magnetic slot antenna 1401 with respective electric monopole 1405, using a bottom feed.

Applicant respectfully asserts that one of ordinary skill in the art would find the meaning of the phrase “an integrated magnetic dipole and electric dipole” clear, particularly in light of the teachings of the specification and referenced drawings.

The Office Action also asks: “In claims 47 and 112, what is meant by ‘directors extending a scanning angles if (sic) said array’?” Applicant respectfully directs the Examiner’s attention to paragraph [0085] of the present specification which provides:

The scanning angle of an array may be extended by using array configuration 2500, diagrammatically shown in FIGURE 25... When scanning toward an angle along the face of array 2501, see arrow 2502, resonant structures 2503, for example dipole elements, may be used to act as directors to guide fields toward such an acute angle.

Applicant respectfully asserts that one of ordinary skill in the art would find the meaning of the phrase “directors extending a scanning angles of said array,” as recited by claim 47, and similar limitations of claim 112 clear, particularly in light of the teachings of the specification and referenced drawing.

The Office Action states: “In claims 51 and 116, ‘said lines’ has no antecedent basis” and inquires: “Is it meant by ‘said line lengths’?” For the sake of clarity, Applicant has amended claims 51 and 116 to replace the phrase “said lines” with the phrase “said line

lengths”. Further, claims 55-58 and 120-123 have been similarly amended for the sake of clarity.

The Office Action states: “In claim 52, it is unclear what is meant by ‘said line lengths are provided by reduced size phase shift lines’?” Paragraph [0093] of the present specification describes reduced size phase shift lines. For example this paragraph teaches:

FIGURES 37, 38 and 39A illustrate a manner of reducing the phase path lengths, the physical length of the transmission lines, into very small equivalent circuits. As is known in the art and shown in FIGURE 37 a 45 degree line can be reduced in size using three stubs 3701 to form reduced size phase shift line 3700. This reduced size phase shift line 3700 can be reshaped to provide reduced size 45 degree phase shift line 3800. Sections of these lines can be used to form various reduced sized switch line phase delay circuit.

Applicant respectfully asserts that one of ordinary skill in the art would find the meaning of the phrase “said line lengths are provided by reduced size phase shift lines” as recited by claim 52, and similar limitations of claims 53, 117 and 118 clear, particularly in light of the teachings of the specification and referenced drawings.

In response to the Office Action assertion:

In claim 56, line 2; it is unclear what “said line lengths” refer to. Since two “line lengths” has been recited, one in line 1 of claim 56 and the other in line 1 of claim 51 and
The deficiency is found in claims 57 or 58, line 2 would require the same clarification/correction.

Claims 55-58 have been amended to clarify that the line lengths referred to in the various claims are one or more of the same line lengths. Similar, clarification amendments have been made to claims 121-123

The of action states :

In claim 71, line 9, it is unclear what is meant by “each of said plurality of elements” because there are two plurality of

elements recited in the claim, one is a plurality of lower frequency antenna element and the other is a plurality of higher frequency antenna elements. Does it mean “each of said plurality of the lower frequency antenna elements and said plurality of higher frequency antenna elements”?

Applicant respectfully asserts that the meaning of “feeding each of said plurality of elements from a separate input” is clear in claim 71, as filed. However, to advance prosecution of the present application, Applicant has amended claim 71 above to recite “feeding said plurality of lower frequency antenna elements from a separate input from said higher frequency antenna elements.”

The Office Action indicates: “ Claims 22, 39-41, 48-50, 53, 68, 72, 73, 76, 87, 96, 107-109, 113-115, 117-123 are rejected because they depend on claims 21, 38, 47, 52, 67, 71, 75, 86, 95, 106, 112 and 116 respectively.” Whereas each claim rejection under 35 U.S.C. § 112, second paragraph, has been dealt with above with a corresponding amendment or argument, Applicant respectfully asserts that each of claims 13, 21-23, 25, 27, 29-31, 38-41, 47-53, 56-58, 67, 68, 71-73, 75, 76, 86, 87, 95-97, 100, 101, 106-109 and 113-123 satisfy the requirements of 35 U.S.C. § 112, second paragraph, and that the rejection of these claims under 35 U.S.C. § 112, second paragraph, should be withdrawn.

VI. Rejection(s) under 35 U.S.C. § 102(b)

Claims 1-11, 15-20, 26-28, 44, 51, 54, 55, 59-62, 64-66, 69, 70, 74, 77-84, 88, 89, 92-94, 99-101, 116, 119, 120 and 124-127 stand rejected under 35 U.S.C. 102(b) as anticipated by *Nishikawa*. Additionally, claims 1, 12, 79, 85, 90 and 91 stand rejected under 35 U.S.C. 102(b) as anticipated by *Yamazaki*. Applicant respectfully traverses these rejections for the reasons advanced below.

The recited reference does not teach all claimed limitations.

It is well settled that to anticipate a claim, a reference must teach every element of the claim, see M.P.E.P. § 2131. Moreover, in order for a reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, “[t]he elements must be arranged as required by the claim,” see M.P.E.P. § 2131, citing *In re Bond*, 15 US.P.Q.2d 1566 (Fed. Cir. 1990).

Furthermore, in order for a reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim,” see M.P.E.P. § 2131, citing *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913 (Fed. Cir. 1989). Applicant respectfully asserts that the rejections do not satisfy one or more of these requirements, as detailed below.

A. Rejection of claims 1-11, 15-20, 26-28, 44, 51, 54, 55, 59-62 as anticipated by *Nishikawa*

The preamble of independent claim 1 recites: “A low cost adaptive multi-beam and multi-diversity antenna array.” Claim 1 also recites “said elements providing a plurality of beams, each of said beams selectively having diverse characteristics” and “providing adaptive beam forming for said plurality of beams.” *Nishikawa* does not disclose these limitations. As discussed throughout the patent, *Nishikawa* is directed to steering a single antenna beam, “the beam” of a mobile satellite receiver. For example, column 2, lines 65-68 of *Nishikawa* state: “whereby the beam of the array antenna can be steered by controlling the phase of each of said antenna elements depending on the orientation of the moving mobile.” Further, Applicant respectfully asserts that whereas *Nishikawa* does not teach multiple beams it cannot teach cannot teach “each of said beams selectively having diverse characteristics” or “providing adaptive beam forming for said plurality of beams.”

The Office Action asserts “although not explicitly stated in *Nishikawa*, it is inherently that the antenna elements provide the claimed functional recitation of a plurality of beam in different direction, each beams selectively having beam polarization or beam width.” In order to properly establish a rejection based on inherency, “the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art,” M.P.E.P. § 2112, citing *Ex parte Levy*, 17 U.S.P.Q.2d 1461, 1464 (Bd. Pat. App. & Inter. 1990) (emphasis original). The Examiner’s statement “it is inherently that the antenna elements provide the claimed functional recitation of a plurality of beam in different direction, each beams selectively having beam polarization or beam width” does not provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of *Nishikawa*. Further,

Applicant respectfully asserts that since *Nishikawa* fails to teach multiple beams it cannot inherently teach “said beams are selectively defined in different directions,” as recited by claim 2. Further, Applicant respectfully points out that *Nishikawa* is silent concerning beam width, such as recited in claim 4.

Applicant respectfully asserts that at least for the above reasons independent claim 1 is patentable over the 35 U.S.C. § 102 rejection of record citing *Nishikawa*. Furthermore, there are great differences between claim 1 and *Nishikawa*, and a person of ordinary skill in the art considering the prior art would not find these differences obvious.

Claims 2-11, 15-20, 26-28, 44, 51, 54, 55 and 59-62 ultimately depend from independent claim 1, and thus each of claims 2-11, 15-20, 26-28, 44, 51, 54, 55 and 59-62 inherit all limitations of claim 1. Thus, for at least the reasons advanced above in addressing the anticipation rejection of claim 1, each of claims 2-11, 15-20, 26-28, 44, 51, 54, 55 and 59-62 set forth features and limitations not recited by *Nishikawa*. Therefore, Applicant respectfully asserts that claims 2-11, 15-20, 26-28, 44, 51, 54, 55 and 59-62 are also patentable over the 35 U.S.C. § 102 rejection of record citing *Nishikawa*. Further many of claims 2-11, 15-20, 26-28, 44, 51, 54, 55 and 59-62 recite limitation not taught by *Nishikawa*. For example as pointed out above, at least claims 2 and 4 recite limitation not taught by *Nishikawa*.

B. Rejection of claims 1 and 12 as anticipated by *Yamazaki*

Turning to the rejection of independent claim 1 as anticipated by *Yamazaki*, The preamble of independent claim 1 recites “A ... multi-diversity antenna array.” Claim 1 also recites “a plurality of antenna elements, said elements providing a plurality of beams, each of said beams selectively having diverse characteristics,” and “said feed network comprising switched phase shifters.” *Yamazaki* does not disclose these limitations.

M.P.E.P. § 2111.02, citing *Corning Glass Works v. Sumitomo Elec. U.S.A., Inc.*, 868 F.2d 1251, 1257, 9 USPQ2d 1962, 1966 (Fed. Cir. 1989) provides: “Any terminology in the preamble that limits the structure of the claimed invention must be treated as a claim limitation.” Thus, Applicant respectfully asserts that the recitation of the array of claim 1

being a “multi-diversity antenna array” in the preamble of the claim must be treated as a claim limitation. *Yamazaki* is silent concerning any sort of diversity and therefore fails to teach a multi-diversity antenna array.

Additionally, as discussed in column 3, lines 45 through 62, *Yamazaki* teaches two sets of antenna elements, a column of low frequency antenna elements and a column of high frequency antenna elements. In contrast claim 1 recites one “ plurality of antenna elements” and that these elements provide a plurality of beams.” *Yamazaki* relies on each of the separate sets of elements to provide a beam, one fan-type low frequency beam provided by the low frequency elements and one pencil-type high frequency beam provided by the high frequency elements. See Column 7, lines 1-7, of *Yamazaki*. Thus, Applicant respectfully asserts that *Yamazaki* fails to teach “a plurality of antenna elements, said elements providing a plurality of beams,” Much less, “each of said beams selectively having diverse characteristics.”

Lines 1-5 of column 6 discuss the use of a phase shifter in *Yamazaki*. *Yamazaki* teaches that a phase shifter with a set amount of phase shift is switched into a feed to shift the phase of a transmission signal, not a “feed network comprising switched phase shifters,” as recited by claim 1.

Applicant respectfully asserts that at least for the above reasons independent claim 1 is patentable over the 35 U.S.C. § 102 rejection of record citing *Yamazaki*. Furthermore, there are great differences between claim 1 and *Yamazaki*, and a person of ordinary skill in the art considering the prior art would not find these differences obvious.

Claim 12 depends directly from independent claim 1, and thus inherits all limitations of claim 1. Thus, for at least the reasons advanced above in addressing the anticipation rejection of claim 1, claim 12 sets forth features and limitations not recited by *Yamazaki*. Therefore, Applicant respectfully asserts that claim 12 is also patentable over the 35 U.S.C. § 102 rejection of record citing *Yamazaki*.

C. Rejection of claims 64-66, 69 and 70 as anticipated by *Nishikawa*

Similar to independent claim 1 discussed above, independent claim 64 recites: “A low cost adaptive multi-beam and multi-diversity antenna array panel” in the preamble. Independent claim 64 also recites “said elements providing a plurality of beams, each of said beams selectively having diverse characteristics,” and “a feed network ... providing adaptive beam forming for said plurality of beams.” *Nishikawa* does not disclose these limitations.

As discussed above, *Nishikawa* is directed to steering a single antenna beam, “the beam” of a mobile satellite receiver. As also discussed above, since *Nishikawa* does not teach multiple beams, it cannot be fairly described as teaching “each of said beams selectively having diverse characteristics” or “providing adaptive beam forming for said plurality of beams.”

Applicant respectfully asserts that at least for the above reasons independent claim 64 is patentable over the 35 U.S.C. § 102 rejection of record citing *Nishikawa*. Furthermore, there are great differences between claim 64 and *Nishikawa*, and a person of ordinary skill in the art considering the prior art would not find these differences obvious.

Claims 65, 66, 69 and 70 depend directly from independent claim 64, and thus each of claims 65, 66, 69 and 70 inherit all limitations of claim 64. Thus, for at least the reasons advanced above in addressing the anticipation rejection of claim 64, each of claims 65, 66, 69 and 70 set forth features and limitations not recited by *Nishikawa*. Therefore, Applicant respectfully asserts that claims 65, 66, 69 and 70 are also patentable over the 35 U.S.C. § 102 rejection of record.

D. Rejection of claims 74, 77 and 78 as anticipated by *Nishikawa*

Similar to independent claims 1 and 64 discussed above, independent claim 74 recites: “A low cost adaptive multi-beam and multi-diversity wireless local area network antenna array panel” in the preamble. Independent claim 74 also recites “said elements providing a plurality of beams, each of said beams selectively having diverse characteristics,” and “a feed network ... providing adaptive beam forming for said plurality of beams.” *Nishikawa* does not disclose these limitations.

As discussed above, *Nishikawa* is directed to steering a single antenna beam, “the beam” of a mobile satellite receiver. As also discussed above, since *Nishikawa* does not teach multiple beams, it cannot be fairly said to teach “each of said beams selectively having diverse characteristics” or “providing adaptive beam forming for said plurality of beams.”

Applicant respectfully asserts that at least for the above reasons independent claim 74 is patentable over the 35 U.S.C. § 102 rejection of record citing *Nishikawa*. Furthermore, there are great differences between claim 74 and *Nishikawa*, and a person of ordinary skill in the art considering the prior art would not find these differences obvious.

Claims 77 and 78 depend directly from independent claim 74, and thus each of claims 77 and 78 inherit all limitations of claim 74. Thus, for at least the reasons advanced above in addressing the anticipation rejection of claim 74, each of claims 77 and 78 set forth features and limitations not recited by *Nishikawa*. Therefore, Applicant respectfully asserts that claims 77 and 78 are also patentable over the 35 U.S.C. § 102 rejection of record.

E. Rejection of claims 79-84, 88, 89, 92-94, 99-101, 116, 119, 120 and 124-127 as anticipated by *Nishikawa*

The preamble of independent claim 79 recites: “A method for adaptively providing multiple antenna beams having multi-diversity.” Independent claim 79 also recites “providing, by said elements, a plurality of antenna beams, each of said beams selectively having diverse characteristics,” and “providing by said feed network adaptive beam forming for said plurality of beams.”

As discussed above, *Nishikawa* is directed to steering a single antenna beam, “the beam” of a mobile satellite receiver. Similar to as discussed above, since *Nishikawa* does not teach multiple beams, it cannot be fairly characterized as teaching a method for adaptively providing multiple antenna beams, much less those beams having multi-diversity, as recited in the preamble of claim 79. More specifically, the single beam system of *Nishikawa* cannot teach providing a plurality of antenna beams, as recited in the body of claim 79, much less each of the beams selectively having diverse characteristics. Thus, it seems that *Nishikawa* also fails to teach a feed network providing adaptive beam forming of a plurality of beams.

As discussed above, the Examiner's statement "it is inherently that the antenna elements provide the claimed functional recitation of a plurality of beam in different direction, each beams selectively having beam polarization or beam width" does not provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of *Nishikawa*. Further, Applicant respectfully asserts that since *Nishikawa* fails to teach multiple beams it cannot inherently teach "selectively defining said beams in different directions," as recited in claim 80. Further, Applicant respectfully points out that *Nishikawa* is silent concerning beam width, such as recited in claim 82.

Applicant respectfully asserts that at least for the above reasons independent claim 79 is patentable over the 35 U.S.C. § 102 rejection of record citing *Nishikawa*. Furthermore, there are great differences between claim 79 and *Nishikawa*, and a person of ordinary skill in the art considering the prior art would not find these differences obvious.

Claims 80-84, 88, 89, 92-94, 99-101, 116, 119, 120 and 124-127 each ultimately depend from independent claim 79, and thus each of claims 80-84, 88, 89, 92-94, 99-101, 116, 119, 120 and 124-127 inherit all limitations of claim 79. Thus, for at least the reasons advanced above in addressing the anticipation rejection of claim 79, each of claims 80-84, 88, 89, 92-94, 99-101, 116, 119, 120 and 124-127 set forth features and limitations not recited by *Nishikawa*. Therefore, Applicant respectfully asserts that claims 80-84, 88, 89, 92-94, 99-101, 116, 119, 120 and 124-127 are also patentable over the 35 U.S.C. § 102 rejection of record citing *Nishikawa*. Further, many of claims 80-84, 88, 89, 92-94, 99-101, 116, 119, 120 and 124-127 recite limitation not taught by *Nishikawa*. For example as pointed out above, at least claims 80 and 82 recite limitation not taught by *Nishikawa*.

F. Rejection of claims 79, 85, 90 and 91 as anticipated by Yamazaki

Turning to the rejection of independent claim 79 as anticipated by *Yamazaki*, the preamble of independent claim 79 recites: "A method for adaptively providing multiple antenna beams having multi-diversity. Claim 79 also recites "feeding a plurality of antenna elements with a switched phase shifter feed network" and "providing, by said elements [of

said plurality of antenna elements], a plurality of antenna beams, each of said beams selectively having diverse characteristics.” *Yamazaki* does not disclose these limitations.

As noted above in addressing the rejection of claim 1, *Yamazaki* is silent concerning any sort of diversity and therefore fails to teach a method for adaptively providing multiple antenna beams having multi-diversity. Lines 1-5 of column 6 of *Yamazaki* discuss the use of a phase shifter. *Yamazaki* teaches that a phase shifter with a set amount of phase shift is switched into a feed to shift the phase of a transmission signal, not “feeding a plurality of antenna elements with a switched phase shifter feed network” as recited by claim 79.

Additionally, as discussed in column 3, lines 45 through 62, *Yamazaki* teaches two sets of antenna elements, a column of low frequency antenna elements and a column of high frequency antenna elements. In contrast, claim 79 recites feeding one plurality of antenna elements and that these elements provide a plurality of beams.” *Yamazaki* relies on each of the separate sets of elements to provide a beam, one fan-type low frequency beam and one pencil-type high frequency beam. See Column 7, lines 1-7 of *Yamazaki*. Thus, Applicant respectfully asserts that *Yamazaki* fails to teach “providing, by said elements [of said plurality of antenna elements], a plurality of antenna beams,” much less “each of said beams selectively having diverse characteristics.”

Applicant respectfully asserts that at least for the above reasons independent claim 79 is patentable over the 35 U.S.C. § 102 rejection of record citing *Yamazaki*. Furthermore, there are great differences between claim 79 and *Yamazaki*, and a person of ordinary skill in the art considering the prior art would not find these differences obvious.

Claim 85, 90 and 91 ultimately depend from independent claim 79, and thus each of claims 85, 90 and 91 inherits all limitations of claim 79. Thus, for at least the reasons advanced above in addressing the anticipation rejection of claim 79, claim 85, 90 and 91 sets forth features and limitations not recited by *Yamazaki*. Therefore, Applicant respectfully asserts that claims 85, 90 and 91 are also patentable over the 35 U.S.C. § 102 rejection of record citing *Yamazaki*.

VII. Rejections under 35 U.S.C. § 103(a)

Claims 24, 42, 43, 110 and 111 stand rejected under 35 U.S.C. § 103(a) as unpatentable over *Nishikawa*. Claims 32 and 33 stand rejected as unpatentable over *Nishikawa* in view of *Kitsch*. Claims 32 and 33 stand rejected as unpatentable over *Nishikawa* in view of *Stotler*. Claim 45 stands rejected as unpatentable over *Nishikawa* in view of *Tillery*. Thus, each of claims 24, 32-37, 42, 43, 45, 104, 105, 110 and 111 are rejected under 35 U.S.C. § 103(a) as being unpatentable over *Nishikawa* as modified by the Office Action or in combination with another reference. Applicant respectfully traverses these rejections.

A Prima Facie case of obviousness has not been established.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art cited must teach or suggest all the claim limitations. See M.P.E.P. § 2143. Without conceding the first and second criteria, Applicant asserts that the rejection does not satisfy the third criterion.

The recited combination does not teach or suggest all claimed limitations.

The Office Action admits that *Nishikawa* does not teach various elements of claims 24, 32-37, 42, 43, 45, 104, 105, 110 and 111. The Office Action attempts to cure this deficiency by modifying *Nishikawa* and/or introducing one of *Kitsch*, *Stotler*, or *Tillery*, which the Office Action alleges to teach the missing element(s). However, the combinations/modifications, as presented, do not teach or suggest all limitations of the claimed invention of claims 24, 32-37, 42, 43, 45, 98, 102-105, 110 and 111.

Each of claims 24, 32-37, 42, 43 and 45 ultimately depend from independent claim 1. As noted above in addressing the anticipation rejection of claim 1, *Nishikawa* fails to teach or suggest various limitations of claim 1. In the rejections of claims 24, 32-37, 42, 43 and 45, *Nishikawa* is not modified to provide these limitations and *Kitsch*, *Stotler*, and/or *Tillery* are not relied upon in the Office Action as disclosing these limitations. Therefore, the

combination of references nor *Nishikawa* as modified by the Office Action teach all elements of claims 24, 32-37, 42, 43 and 45.

Each of claims 98, 102-105, 110 and 111 ultimately depend from independent claim 79. As noted above in addressing the anticipation rejection of claim 79, *Nishikawa* fails to teach or suggest various limitations of claim 79. In the rejection of claims 98, 102-105, 110 and 111 *Nishikawa* is not modified to provide these limitations and *Kitsch*, *Stotler*, or *Tillery* are not relied upon in the Office Action as disclosing these limitations. Therefore, the combination of references nor *Nishikawa* as modified by the Office Action teach all elements of claims 98, 102-105, 110 and 111.

For at least the above reasons claims 24, 32-37, 42, 43, 45, 98, 102-105, 110 and 111 are patentable over the 35 U.S.C. § 103(a) rejection of record. Therefore, Applicant respectfully asserts that the rejection of claims 24, 32-37, 42, 43, 45, 98, 102-105, 110 and 111 should be withdrawn.

VIII. Conclusion

The Examiner is thanked for the indication that claims 25, 46, 63 and 128 include allowable subject matter. However, Applicant notes that claims 71-73 (like claim 25) are only rejected under 35 U.S.C. § 112, second paragraph, and not under §§ 102 or 103. Therefore, Applicant respectfully requests the Examiner either indicate allowance of independent claim 71 and its dependent, claims 72 and 73, or indicate any rejection of these claims under 35 U.S.C. §§ 102 or 103 in a non-final Office Action so that Applicant may have a full and fair opportunity to address any further rejection of these claims.


For all the reasons given above, Applicant submits that the pending claims distinguish over the prior art under 35 U.S.C. §§ 102 and 103, and meet the requirements of 35 U.S.C. § 112. Accordingly, Applicant submits that this application is in full condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge Deposit Account No. 06-2380, under Order No. 64032/P010US/10309493, from which the undersigned is authorized to draw.

Applicant respectfully requests that the Examiner call the below listed attorney if the Examiner believes that the attorney can help in resolving any remaining issues or can otherwise be helpful in expediting prosecution of the present application.

Dated: August 23, 2005

Respectfully submitted,

By 

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